



**ENVIRONMENTAL PERFORMANCE AND
FINANCIAL PERFORMANCE: AN EMPIRICAL
STUDY ON MANUFACTURING COMPANIES IN
JEDDAH, SAUDI ARABIA**

BY

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the degree of Doctor of Philosophy in the Department of
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ABSTRACT

This thesis uses Resource-Based View (RBV) framework to examine whether improved environmental performance (EP) leads to better financial performance (FP) in manufacturing companies in Saudi Arabia. To ensure an appropriate match of measures used to evaluate EP and FP within the RBV framework, the thesis measures EP and FP in both their strategic and operational dimensions. EP is measured through the strategic indicators of top management commitment (TMC) and EMS-ISO14001 and the operational indicators of programmes to reduce environmental impact (PREI) and environmental strategy (ES). For FP, the strategic indicator is shareholder value and the operational indicators are profitability and liquidity. A review of the existing literature reveals the lack of a theoretical foundation and methodological shortcomings in measuring EP and analyzing the relationship between EP and FP, leading to inconsistent results. The thesis addresses these issues. A questionnaire surveys the subjective perceptions of managers in evaluating their companies' EP and FP, followed up by semi-structured interviews conducted with ten of the survey respondents. The data obtained was analysed using a structural model based on Partial Least Square (PLS) analysis. Two main models were presented in this study to test the hypotheses. The first model is the second-order structural model to examine the positive effect of EP on FP. The second model is the first-order structural model to explore the positive effect of each EP indicator on FP. In addition, the present study investigates the moderating effect of company size and industry classification. The finding generated from the first model provides solid support of the main hypothesis of EP and confirms the RBV framework. The findings of this model also show that the most significant indicator related to the underlying EP construct is the TMC indicator. Based on the findings obtained from the second model, only the TMC indicator has significant positive impact on FP. The results produced from both models confirm the significance of strategic dimension of EP, especially the proactive involvement of top management in environmental protection. The result of the moderating effect was neutral. The findings from the interviews provide support for the main hypothesis and suggest some explanation of the unexpected survey results. Essentially, the results of this study are relevant in light of the many roles that can be played by policy makers which might prove to be beneficial for improving the EP of companies in the Saudi Arabian context.

ملخص البحث

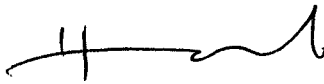
بالاعتماد على نظرية الموارد تقوم الدراسة الحالية باختبار ما إذا كان تحسين الأداء البيئي يؤثر إيجابيا على الأداء المالي للمصانع في المملكة العربية السعودية. وللحصول على نتائج منطقية، قامت الدراسة بقياس الأداء البيئي والأداء المالي من نفس وجهتي النظر الاستراتيجية والتشغيلية. تتمثل المقاييس الاستراتيجية للأداء البيئي في التزام الإدارة العليا وشهادة الأيزو البيئية، أما المقاييس التشغيلية فتتمثل في الاستراتيجية البيئية والبرامج التي تعمل على تخفيض الأثر السلبي على البيئة. أما بالنسبة لمقياس الأداء المالي الاستراتيجي فهو قيمة حقوق المساهمين، ومقاييس الأداء المالي التشغيلية تتمثل بالربحية والسيولة. ومن خلال مراجعة الدراسات السابقة اتضح أن سبب تناقض نتائج الأبحاث تعود إلى سببين رئيسيين وهما: (1) الاطار النظري المستخدم لتفسير العلاقة بين الأداء البيئي والأداء المالي وإلى الاطار النظري المستخدم لقياس الأداء البيئي، (2) صعوبات واختلاف المنهجية المستخدمة في قياس الأداء البيئي وفي جمع البيانات لتحليل العلاقة بين الأداء البيئي والأداء المالي. وقد قامت الدراسة الحالية بمعالجة هذين السببين. استخدمت الدراسة الاستبانة لجمع البيانات عن الأداء البيئي والمالي ولتأكيد بعض نتائج الاستبانة أو الاستفسار عن بعضها قامت الباحثة بإجراء مقابلات عن طرق التليفون مع عشرة مدراء ماليين قاموا بالإجابة على الاستبانة. وتم تحليل البيانات باستخدام الأسلوب الاحصائي Partial Least Square (PLS). بواسطة PLS قامت الدراسة باستخدام أسلوبين لاختبار فرضيات البحث. الأسلوب الأول (Second-order structural model) اختبر الفرضية الأولى والفرضيات التابعة لها. أما الأسلوب الثاني (First-order structural model) اختبر الفرضيات التي تتعلق بالتأثير الإيجابي لكل معيار من معايير الأداء البيئي على الأداء المالي. دعمت نتائج البحث من الأسلوب الأول دعما قويا للفرضية الأولى كما أكدت ما طرحته نظرية الموارد. كما أظهرت النتائج أن أهم مقياس للأداء البيئي هو التزام الإدارة العليا للمصنع. كما أكدت نتائج الأسلوب الثاني أيضاً أن التزام الإدارة العليا للمصنع هو المقياس الوحيد الذي له تأثير إيجابي مهم على الأداء المالي. وبذلك تؤكد نتائج الأسلوبين على أهمية وجهة النظر الاستراتيجية للأداء البيئي، وبالنسبة لنتائج اختبار الفرضيات الأخيرة فكانت حيادية. أما بالنسبة لنتائج المقابلات الشخصية فكانت داعمة لنتائج التحليل الاحصائي لفرضية البحث الرئيسية، كما قدمت توصيات وتفسيرات لنتائج البحث الغير متوقعة من التحليل الاحصائي. كانت نتائج البحث مهمة لصناع القرار للسعي والمثابرة على تحسين الأداء البيئي في المصانع بالمملكة العربية السعودية.

APPROVAL PAGE

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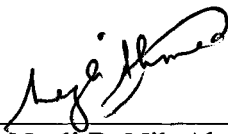
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DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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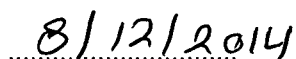
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To my
beloved parents and husband Hisham,
who supported me and
were my source of inspiration and motivation
throughout my study period.

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TABLE OF CONTENTS

Abstract.....	ii
Abstract in Arabic.....	iii
Approval Page.....	iv
Declaration	v
Copyright Page	vi
Acknowledgements.....	viii
List of Tables.....	xii
List of Figures	xiv
List of Abbreviations.....	xv
CHAPTER ONE: INTRODUCTION.....	1
1.0 Background	1
1.1 Motivations for the Study	4
1.2 Objectives of the Study	9
1.3 Scope of the Study	10
1.4 Contributions of the Study	11
1.5 Organization of the Study	13
CHAPTER TWO: LITERATURE REVIEW	15
2.0 Introduction.....	15
2.1 Theoretical Literature.....	16
2.1.1 Environmental Performance and Financial Performance	16
2.1.2 Environmental Performance Measures	24
2.2 Methodological Limitations.....	39
2.2.1 The Lack of Uniformity in EP Measurements	39
2.2.2 The Lack of Uniformity in FP Measurements	41
2.3 Empirical Literature	47
2.3.1 Review of Empirical studies before the Mid-1990s	48
2.3.2 Review of Empirical Studies after the Mid-1990s.....	54
2.3.2.1 One dimension of EP measures	56
2.3.2.2 Two dimensions of EP measures	65
2.3.2.3 Company size and industry classification as control variables	69
2.4 Summary	72
CHAPTER THREE: OVERVIEW OF SAUDI ARABIA AND ENVIRONMENTAL PROTECTION.....	74
3.0 Introduction.....	74
3.1 Political System	74
3.2 The Economy of Saudi Arabia.....	75
3.2.1 Natural Resources	75
3.2.2 Industrial development.....	78

3.3 Environmental Protection	80
3.3.1 National Development Plan and Environmental Protection	80
3.3.2 PME and Environmental Laws	82
3.4 Summary	90
CHAPTER FOUR: THEORETICAL FRAMEWORK.....	91
4.0 Introduction.....	91
4.1 Resource-Based View Framework.....	91
4.2 Research Framework	95
4.2.1 Hypotheses Development (H1, H2, H3).....	96
4.2.1.1 The effect of EP on FP	96
4.2.1.2 The indicators of EP and FP	101
4.2.1.3 The moderating effect	103
4.3 Summary	105
CHAPTER FIVE: RESEARCH METHODOLOGY	107
5.0 Introduction.....	107
5.1 Philosophical Stance	107
5.2 Research Design: Mixed Methods	108
5.3 Questionnaire Survey	110
5.3.1 The Unit of Analysis	110
5.3.2 Study Population and Sampling.....	111
5.3.3 The Instrument Development	112
5.3.4 Administration of the Questionnaire.....	113
5.3.5 Questionnaire Design.....	114
5.3.5.1 Section A: General Information	117
5.3.5.2 Section B: Company’s Environmental Performance.....	118
5.3.5.3 Section C: Company’s Financial Performance.....	122
5.3.6 Data Analysis	124
5.3.6.1 Reliability and Validity Test.....	124
5.3.6.2 Hypotheses Testing	125
5.4 Interviews.....	127
5.4.1 Design of Interview.....	128
5.4.2 Qualitative Data Analysis	128
5.5 Summary	129
CHAPTER SIX: RESULTS AND DISCUSSION	130
6.0 Introduction.....	130
6.1 Response Rate	131
6.2 Profile of Respondents	132
6.3 Profile of Sample Companies	133
6.4 Data Cleaning.....	134
6.5 Descriptive/ Frequency Statistics.....	135
6.5.1 Moderating Effects.....	135
6.5.1.1 Industrial classification.....	135
6.5.1.2 Size of the company	136

6.5.2 Indicators of Environmental Performance (EP).....	137
6.5.2.1 Top management commitment (TMC).....	137
6.5.2.2 EMS-ISO 14001	139
6.5.2.3 Programme to reduce environmental impact (PREI).....	140
6.5.2.4 Environmental strategy (ES)	141
6.5.3 Indicators of Financial Performance (FP).....	144
6.5.3.1 Profitability and liquidity	144
6.5.3.2 Shareholder value.....	145
6.6 Exploratory Factor Analysis (EFA)	146
6.6.1 Top Management Commitment (TMC).....	148
6.6.2 Programme to Reduce Environmental Impact (PREI).....	151
6.6.3 Environmental Strategy (ES)	152
6.6.4 Operational and Strategic Financial Performance	155
6.7 Confirmatory Factor Analysis (CFA)	157
6.7.1 Results of Measurement Models.....	158
6.8 Test of Hypotheses.....	161
6.8.1 Second-Order Structural Models Results.....	161
6.8.2 The Results of the First-Order Structural Model	170
6.8.2.1 Top Management Commitment and Financial Performance.....	171
6.8.2.2 EMS-ISO14001 and Financial Performance	173
6.8.2.3 Environmental Strategy and FP	174
6.8.2.4 Programme to Reduce Environmental Impact and FP	176
6.8.3 Results of the Moderating Effects.....	177
6.9 Summary	179

CHAPTER SEVEN: CONCLUSION	181
7.0 Introduction.....	181
7.1 The Study	181
7.2 The Findings	184
7.3 Contributions and Implications.....	187
7.4 Limitations	190
7.5 Future Research	191

BIBLIOGRAPHY	193
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APPENDIX A: QUESTIONNAIRE SURVEY.....	211
APPENDIX B: INTERVIEW GUIDE.....	219

LIST OF TABLES

<u>Table No.</u>		<u>Page No.</u>
2.1	Views on the relationship between EP and FP	22
2.2	Organizations evaluating EP in developed countries	26
2.3	Research on the development of EP measurement model	29
2.4	Components for environmental performance evaluation	31
2.5	Summary of the empirical studies before the mid-1990s	53
2.6	Summary of empirical studies used one dimension to measure EP	61
2.7	Summary of empirical studies used two dimensions to measure EP	68
5.1	Construct items and their sources	115
5.2	Items used to measure top management commitment	119
5.3	Items used to measure programme to reduce environmental impact	120
5.4	Items used to measure the adoption of environmental strategies	122
5.5	Items used to measure financial performance	123
6.1	Response rate for survey	131
6.2	Profile of respondents: level of education	132
6.3	Profile of respondents: working experience	133
6.4	Profile of sample companies	134
6.5	Industrial classification	136
6.6	Size of the company	137
6.7	Extent of top management commitment to environmental activities	138
6.8	Extent of EMS- ISO14001 implementation status	140
6.9	Extent of programme to reduce environmental impact implementation	141
6.10	The extent of environmental strategy adoption	143

6.11	Extent of OFP conformance to the company's goals	144
6.12	Extent of SFP conformance to the company's goals	146
6.13	PCA of top management commitment	150
6.14	PCA of programme to reduce environmental impact	152
6.15	PCA of environmental strategy	154
6.16	PCA of operational and strategic financial performance	156
6.17	Reflective measurement model constructs	159
6.18	Hierarchical measurement model results	160
6.19	The second-order structural model results	164
6.20	The first nested structural model results	166
6.21	The second nested structural model results	168
6.22	The demographic of interviewee	169
6.23	Results of effect of each EP indicator on FP	171
6.24	Moderating effects of industry classification and company size	178
7.1	Summary of the findings	187

LIST OF FIGURES

<u>Figure No.</u>		<u>Page No.</u>
2.1	The difference between the traditionalist and revisionist views	18
2.2	The synthesis of traditionalist and revisionist views	20
2.3	Relationships between environmental and financial performance	23
2.4	Framework for measuring environmental performance	34
2.5	The measurement items of operational environmental performance	35
2.6	The indicators of financial performance	46
4.1	The effect of environmental performance on financial performance	96
5.1	The sequential explanatory design	110
6.1	The effect of EP on FP	164
6.2	The effect of EP on SFP	166
6.3	The effect of EP on OFP	167
6.4	The effect of each EP indicator on FP	171

LIST OF ABBREVIATIONS

CFA	Confirmatory Factor Analysis
EFA	Exploratory Factor Analysis
EA	Environmental Accounting
EMS	Environmental Management System
EP	Environmental Performance
ES	Environmental Strategy
FP	Financial Performance
HSE	Health, Safety and Environment
ISO	International Organization for Standardization
OEP	Operational environmental Performance
OFP	Operational Financial Performance
PCA	Principal Component Analysis
PES	Proactive Environmental Strategy
PhD	Doctor of philosophy
PLS	Partial Least Square
RBV	Resource-based View
RES	Reactive Environmental Strategy
SEP	Strategic Environmental Performance
SFP	Strategic Financial Performance
PME	Presidency of Meteorology and Environment
PREI	Programme to Reduce Environmental Impact
TMC	Top Management Commitment

CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND

Change in climate, fast depletion of natural resources and the threat of global warming have made the environment a leading global issue. In addressing the issue, government and non-governmental organizations throughout the world are making concerted efforts to bring about positive change. These efforts have made environmental performance (EP) a concern for all businesses. With the advent of ISO 14001, Environmental Management System (EMS) implementation is gaining popularity as a result of its perceived link to profitability. Environmental sustainability has also been one of the overarching goals of companies in their corporate responsibility. A fundamental question that needs to be answered is whether good environmental performance (EP) can be associated with good financial performance (FP). However, over 40 years of study have not been able to identify a clear picture on the relationship between a company's EP and its FP (Russo & Fouts, 1997; Waddock & Graves, 1997; Dowell, Hart, & Yeung, 2000; King & Lenox, 2001; Konar & Cohen, 2001; Margolis & Walsh, 2003; Orlitzky, Schmidt & Rynes, 2003; Günther, Hoppe & Endrikat, 2011).

Two main reasons have been offered for the inconclusiveness of the findings: the lack of the theoretical framework employed to explain the link between EP and FP and the absence of framework used to measure EP. The literature on the EP-FP link has studied their relationship by using several hypotheses that have been developed from different theories, most prominent among these being stakeholder theory and

shareholder theory. The outcome of the studies has always been determined by which of these two divergent theories is used. Stakeholder theory (which reflects the revisionist view) holds that a company can incorporate EP in its activities and still perform well financially in the long-run. Thus, stakeholder theory asserts that environmental activities are the right thing to do even if they lead to short-term losses as they provide profitable return and competitive advantage to the company in the long-run. This is referred to as a win-win situation. On the other hand, shareholder theory (which represents the traditionalist view) maintains that a company has to choose between doing well financially or doing good environmentally. Advocates of shareholder theory believe that incorporating EP will affect the shareholder profit since much of the resources will be committed to implementing environmentally sustainable activities. Therefore, they propose that incorporating EP into the business will bring losses to the shareholder, i.e. a win-loss situation (Cheers, 2011).

The second limitation from the theoretical perspective is that most of the empirical researchers have chosen indicators based on practical feasibility rather than on theoretical considerations (Salzmann, Ionescu-somers & Steger, 2005; Wood, 2010). However, the theoretical basis to justify EP measurements has been taken into account by a few studies, such as Lankoski (2000), who justifies the measurements of EP in relation to environmental outcomes. In this way, EP measurements are derived firstly from theory before empirical studies are conducted (Wood, 2010). As recommended by Weber (2008) and Orlitzky, Siegel, and Waldman (2011), the literature needs more research on measurements of EP to answer the question of how to measure EP correctly.

A further reason that has contributed to uncertainty and ambiguity about the relationship between EP and FP is methodological difficulties (Salzmann et al., 2005;

McWilliams, Siegel, & Wright, 2006). In particular, there are different methodologies applied to measure EP, such as pollution indices, data obtained from surveys and data provided by third parties (Allouche & Laroche, 2005). The use of a diversity of indicators to measure EP is also considered to be a leading cause for the contradictory findings on the EP-FP link.

As far as the subject matter of this study is concerned, Saudi Arabia as the leading world petroleum reserve and the custodian of the Islamic religion has paid much attention to the issue of environmental sustainability. From the first Five-year Development Plans (1970-1975), Saudi Arabia has paid great attention to the protection of the environment and development of natural resources. It has also established, in 1981, the Presidency of Meteorology and Environment (PME), which observes environmental regulations, standards and criteria. Additionally, it has adopted necessary procedures to co-ordinate and co-operate with the authority which is empowered to approve projects which may negatively impact the environment (Licensing Authority)¹. Frequently, it also participates in conferences and international events that take place to address environmental affairs. For example, Saudi Arabia attended the "Earth Summit" in Rio de Janeiro², where it signed several agreements concerned with biodiversity, climate change and combating desertification. Although there has been much research on environmental issues in Saudi Arabia (Abo-Kashaba, 2002; Al-Marzoki, 2004; Al-Saad, 2006; Al-Baz, 2007; Al-Saad, 2007; Ismail, 2009) none has evaluated the impacts of EP on FP of the manufacturing sector. This study proposes to fill this gap.

¹http://www.pme.gov.sa/en/env_law.asp

²The United Nations Conference on Environment and Development which met at Rio de Janeiro from 3 to 14 June 1992.

1.1 MOTIVATIONS FOR THE STUDY

Notwithstanding that several hypotheses have been developed from different theories to explain the EP-FP link, the absence of a sound theoretical foundation to explain why EP should be related to FP continues to contribute to the inconsistent results. However, due to a substantial increase in resources allocated to environmental activities in recent years, leading corporations around the world have become more strategic in their approach. For instance, they invest in environmental programmes with a view to mitigate risks such as reputational damage or lawsuits. This subsequently increases a company's market valuation and can be positively linked with FP (Orlitzky et al., 2003; Wagner, 2009; Barnea & Rubin, 2010). In other words, companies' engagement in environmental activities can be perceived as a strategic opportunity rather than as a threat (Glac, 2010). This is consistent with the resource-based view (RBV) perspective. Essentially, this means that companies undertake activities through the collection of internal specific-resources they acquire and this causes the differences in their performance (Barney, 1991; Teece, 1998). The foundation of this view stems directly from the strategic management field. Consistent with this perspective, generating strategic intangible, difficult-to-replicate resources such as doing good, which is considered as a driver of a company's reputation, will engender opportunities for the company to build its competitive advantage and this leads to creating value for shareholders as well as enabling it to outperform its rivals. Consequently, the present study uses the RBV framework in order to explain why managers choose to engage in environmental activities.

Along the lines of theoretical perspective, with environmental issues being complex, multi-dimensional and often difficult to quantify, there is not yet a consensus to address, theoretically at least, the common dimensions of EP (Ilinitich,

Soderstrom & Thomas, 1998; Wagner, Van Phu, Azomahou & Wehrmeyer, 2002; Hertin, Berkhout, Wagner & Tyteca, 2004). Much of prior research have either used one or at most two indicators (to measure EP). Additionally, most studies have not made distinction between strategic and operational measures of EP. Accordingly, the inconsistent results may well be due to this. This led Wood and Jones (1995) to suggest that the measurements of EP and FP should be linked theoretically (i.e. categorized into strategic and operational measures) to produce consistent results. Thus, to mitigate the confounding effect of this measurement mismatch, the present study measures EP and FP along the divides of operational and strategic considerations. The indicators for EP based on the strategic dimension include top management commitment (TMC) and EMS-ISO14001 certification while the indicators based on the operational dimension include environmental strategies (ES) and programmes to reduce environmental impact (PREI). In terms of FP, the strategic and operational dimensions are represented by shareholder value, profitability and liquidity respectively.

Another issue that often arises in studying the relationship between EP and FP is methodological shortcomings; both measurement and sampling errors are considered reasons for inconsistent findings (Orlitzky et al., 2003). Despite a range of measures that have been developed to evaluate EP, the heterogeneity and scarcity of these measures make evaluation problematic (Hertin et al., 2004). In fact, most studies are based on data generated through companies' self-assessment and the focus is on a very small number of companies (Hertin et al., 2004). The comparison among companies regarding EP is challenging even for companies that operate in the same sector because their activities are performed under different economic, technological and regulatory conditions.

In accordance with the aforementioned, there is always a risk of a vicious circle in the existing measurements and ratings that impede stakeholders from interpreting such data and reduce the credibility of these measures and ratings which might be attributable to measurement errors (Ilinitich et al., 1998; Xie & Hayase, 2007). As a response to these challenges, most studies use postal or telephone surveys as methods to obtain data to measure EP (Hertin et al., 2004). Consistent with these studies, the current study also uses a questionnaire survey to measure EP in an attempt to reduce measurement error.

Concerning sampling error, researchers such as Wagner (2001) and Orlitzky et al. (2003) argue that empirical studies should use a large sample size. They note that prior studies had sampling error problems apparently due to their small sample size. In order to reduce sampling error, the Partial Least Squares (PLS), which is useful in generating estimates with very small sample size, is used in the present study (Haenlein & Kaplan, 2004).

In addition to the issues discussed here, it is important for Saudi Arabia (as a Muslim country) to comply with Islamic principles and laws of protection of the environment to preserve natural resources. Pollution, according to the Qur'an, is mischief where Allah (SWT) says:

كلوا واشربوا من رزق الله ولا تعثوا في الأرض مفسدين³

Eat and drink of the substance provided by Allah and do not cause mischief on the earth.

Moreover, wastefulness and the pollution of natural resources are prohibited in Islam because they go against the functions and purposes of creation. Hence, these acts cause mischief as the Holy Qur'an describes:

³Al Qur'an, surah Al-Baqarah 2:60

ظهر الفساد في البر والبحر بما كسبت أيدي الناس⁴

Mischief has appeared on land and sea because of (the need) that the hands of men earned.

In keeping with these religious imperatives, an increasing number of environmental regulations in Saudi Arabia have clearly become very important to drive community awareness and campaign effectiveness. This may, subsequently, lead to better FP. Most importantly, given Islam's emphasis on the environment, one expects a positive response towards environmental issues consistent with studies done in other developed countries. Accordingly, the study examining the relationship between EP and FP becomes pertinent.

As well as its religious significance, Saudi Arabia is recognized as one of the most important emerging economies in the Middle East in terms of economic growth due to oil production (Taher & Hajjar, 2013). This and the existence of a large sector of manufacturing industries give Saudi Arabia a major role in the global economy. While the Saudi Arabia context is very specific, this study will offer a model that will be of relevance not only for Saudi Arabia but also for other countries in the Middle East.

Currently, research addressing environmental issues is not as advanced in Saudi Arabia as it is in Western countries such as the United States, Canada and Australia. Clemens and Bakstran (2010) point out that developed countries appear more environmentally conscious than many developing countries due to them having different priorities. However, in practice, EP in Saudi Arabia is not seen as a priority as compared to developed countries. The primary reason for this is that there is insufficient pressure from stakeholders, government or NGOs. Moreover, the close

⁴ Al Qur'an, surah Al-Rom 30:41

underlying association and interdependence between business and society in the Saudi context creates conditions for a less formalized approach to social and environmental responsibilities, which are most commonly associated with charity (Jamali & Mirshak, 2007; Visser, 2008). This is also true for other countries in the Middle East and for developing countries more generally.

Previous research on environmental accounting in Saudi Arabia has been restricted to environmental issues in general (Al-Saad, 2006), the significance of environmental costs (Abo-Kashaba, 2002; Al-Marzoki, 2004; Al-Baz, 2007) and the extent of environmental disclosure (Al-Saad, 2007; Ismail, 2009), but it lacks a theoretical framework. These studies also lack evidence regarding the relationship between EP and FP.

In this context, the current research attempts to fill the gap in Saudi literature on environmental issues, particularly, on the relationship between EP and FP. Firstly, engaging with worldwide interest in sustainable development and in order to survive in the long term, manufacturing companies must efficiently integrate environmental programmes, measures, strategies and practices into their everyday operations (Sarkis & Cordeiro, 2001). Accordingly, the present study concentrates on the manufacturing sector when looking at the strategic adoption of particular environmental activities. Specifically, this study seeks to examine the need for adopting certain activities to avoid or reduce the negative impacts of a company's operations and simultaneously maintain or maximize shareholders' value. Lastly, it is envisaged that by undertaking this study a better understanding of environmental decision-making may enhance environmental practices in Saudi Arabia.

1.2 OBJECTIVES OF THE STUDY

The primary research objective is to gain insight into the extent manufacturing companies address environmental matters. More specifically, the objectives of this study are:

1. To explore, under a resource-based view (RBV) perspective, whether enhanced environmental performance (EP) leads to better financial performance (FP).

Given FP is operationalised by two dimensions of strategic financial performance (SFP) and operational financial performance (OFP), the current study aims at examining the effect of EP on SFP and OFP separately. Accordingly, the main objective is divided into the following objectives:

- 1a. To explore, under a resource-based view (RBV) perspective, whether enhanced EP leads to better SFP.
- 1b. To explore, under a resource-based view (RBV) perspective, whether enhanced EP leads to better OFP.
2. To explore whether improved TMC, EMS-ISO14001, ES and PREI result in successful FP under RBV perspective.
3. To examine whether company size and industry classification moderate the relationship between EP and FP under RBV perspective.

On the basis of the objectives discussed above, the following research questions are formulated:

1. Does improved EP lead to successful FP in manufacturing industries?
2. Do enhanced TMC, EMS-ISO14001, ES and PREI result in higher FP in manufacturing industries?
3. Do company size and industry classification moderate the EP-FP link?